

# Broadcast Audio Solutions

HIGHLY INTEGRATED AND EASY TO IMPLEMENT  
SINGLE-CHIP SOLUTIONS



## PRODUCT DESCRIPTION

Silicon Laboratories' family of Si47xx broadcast audio solutions is the industry's first to leverage digital integration and 100% CMOS, resulting in a completely integrated solution that requires only two external components and less than 15 mm<sup>2</sup> of board space. Offering unmatched integration, the Si47xx family enables FM transmission and AM, FM, shortwave, longwave and weather band radio reception in any device. Leveraging Silicon Labs' proven digital low intermediate frequency (low-IF) receiver architecture and frequency synthesizer technology, the Si47xx family delivers superior RF performance and interference rejection. Digital signal processing is utilized to provide optimum sound quality under varying reception conditions. The high level of integration and simplified bill of materials (BOM) enable on-board production testing, increased quality, and improved manufacturing. The Si47xx family also uses a streamlined programming model, which further reduces development time. Having shipped millions of devices worldwide, the proven products of the Si47xx family are ready to be integrated into any portable device.

## MOST INNOVATIVE BROADCAST SOLUTIONS

- First AM/FM digital CMOS solution family
- First, and smallest, FM transceiver (receive and transmit)
- First to support small integrated antennas for FM receive and transmit
- World's smallest FM receiver footprint
- First AM/FM IC with RDS
- First AM/FM IC with no manual alignment required
- First multi-band support for AM/FM/SW/LW and WB
- First footprint compatible family of broadcast audio products
- Highest level of integration

## FEATURES

- Worldwide FM band support (64–108 MHz)
- Worldwide AM band support (520–1720 kHz)
- Shortwave band support (2.3–26.1 MHz)
- Longwave band support (153–279 kHz)
- Weather band support, 1050 Hz warning tone detection (162.4–162.55 kHz)
- Specific Area Message Encode (SAME) support
- Requires only 2 external components
- Advanced AM/FM seek tuning
- PCB trace/integrated antenna support for FM receive and transmit
- Excellent receive overload immunity
- Adaptive noise suppression
- Programmable audio characteristics
- Digital stereo modulator/demodulator
- Programmable transmit level
- Line-level analog input/output
- Digital FM TX gain compression
- Digital audio interface
- Frequency synthesizer with integrated VCO
- Programmable reference clock
- Pb-free and RoHS compliant

## APPLICATIONS

- Cellular handsets/hands free
- Portable media players and accessories
- Consumer electronics
- Navigation devices
- Satellite radios
- AM/FM portable and table radios

## SOLUTIONS GUIDE

HIGHLY INTEGRATED

BEST-IN-CLASS PERFORMANCE

EASIEST TO DESIGN



## HIGHLY INTEGRATED EASIEST TO IMPLEMENT

### Highest Level of Integration

The Si47xx products are the first fully integrated broadcast audio ICs. These solutions require only two external components and 15 mm<sup>2</sup> or less of board space in contrast to dozens of external components and as much as five times the amount of board space for competing products. The high level of integration, small footprint and low power consumption enable the integration of multi-band receivers, FM receivers, FM transmitters, FM transceivers, or data receivers into any consumer device such as mobile phones, MP3 accessories, media players, and navigation devices.

### Best-in-Class Performance

The Si47xx family's excellent selectivity and sensitivity improve user experience and result in reduced interference and increased reception. Its advanced digital audio processing delivers optimum sound quality superior to other solutions even in the presence of variable signal conditions, and its digital architecture enables performance that is unmatched compared to standard analog solutions. With advanced AM and FM seek algorithms and software programmable audio flexibility, the Si47xx family provides an unmatched level of performance.

### Easiest to Design and Manufacture

The Si47xx family is delivered as a fully tested system requiring no factory alignment. Its simple hardware design reduces development time, unlike other solutions that require dozens of components limiting production flow and adding performance variability across products. Evaluation and design is easy with a full reference board including schematics and layout files and a robust development graphical user interface (GUI). These solutions also accept a wide range of antenna inputs from headphone cables to ultra-small ferrites and integrated tuned loops.

## Single PCB for All Broadcast Audio Designs

### Footprint Compatible

The Si47xx family requires only two external components and offers many footprint compatible multi-band receivers.

#### Si4702/03

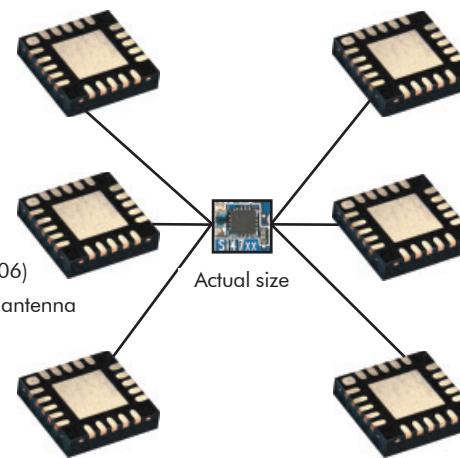
- FM receiver
- RDS (Si4703)

#### Si4704/05/06

- FM receiver
- RDS (Si4705/06)
- Enhanced RDS (Si4706)
- Requires no external antenna

#### Si4710/11/12/13

- FM transmitter
- RDS (Si4711/13)
- Receive Power Scan (RPS) (Si4712/13)



#### Si4720/21

- FM transceiver
- Receive Power Scan (RPS)
- RDS (Si4721)
- Requires no external antenna

#### Si4730/31

- AM/FM receiver
- RDS (Si4731)

#### Si4734/35

- AM/FM/shortwave/longwave receiver
- RDS (Si4735)

#### Si4707/36/37/38/39

- AM/FM/weather band receiver
- RDS (Si4737/39)
- SAME (Si4707- WB only)

### RDS and RBDS Support

The Si47xx family includes a series of solutions that incorporates a digital processor for the European Radio Data System (RDS) and the US Radio Broadcast Data System (RBDS) including all required symbol decoding, block synchronization, error detection, and correction functions. Using this feature, these products enable data such as station identification, artist name, and song title to be transmitted to and displayed on any RDS/RBDS receiver. The Si4749/06 incorporate a high-performance RDS/RBDS decoder based on patented methodologies, and deliver excellent RDS/RBDS sensitivity performance, synchronization to RDS/RBDS at high BLER levels and RDS/RBDS data decoding with superior decoder reliability, making them ideal for performance-intensive Traffic Message Channel (TMC) applications in navigation devices.

### Broadcast Audio Product Family

Part Number	Description	RDS Support	Dig I/O
Si4702/03	FM radio receivers	Si4703	—
Si4704/05 <sup>1</sup>	FM radio receiver, no external antenna required	Si4705	Si4705
Si4706	Enhanced FM RDS/TMC radio receiver, no external antenna required	Si4706	Si4706
Si4707	Weather band radio receiver with SAME decoder	—	—
Si4708/09	World's smallest FM tuner with RDS	Si4709	—
Si4710/11	FM radio transmitter with RDS and digital audio compression	Si4711	Si4711
Si4712/13	FM radio transmitter with RDS, digital audio compression and RPS	Si4713	Si4713
Si4720/21	FM radio transceivers with digital audio compression	Si4721	Si4721
Si4730/31	AM/FM radio receivers	Si4731	Si4731
Si4734 <sup>1</sup> /35 <sup>1</sup>	AM/FM/shortwave/longwave radio receivers	Si4735	Si4735
Si4736/37	AM/FM/weather band radio receivers	Si4737	Si4737 <sup>2</sup>
Si4738/39	FM/weather band radio receivers	Si4739	Si4739 <sup>2</sup>
Si4749	Enhanced FM RDS/TMC radio receiver, automotive qualified	Si4749	—

<sup>1</sup>Extended FM tuning range 64-108 MHz

<sup>2</sup>AM/FM only